

CLAIMS

What is claimed is:

- 1 1. An virtual metropolitan area network (VMAN) architecture system comprising:
2 a metropolitan area network (MAN) servicing at least one of a plurality of
3 customers, each customer having at least one domain;
4 a first switch capable of segregating data packets from a one of the plurality
5 of customers into a VMAN, the VMAN servicing at least one of a plurality of
6 domains, each domain being associated with the same one of the plurality of
7 customers.
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- 1 2. The VMAN architecture system of claim 1, wherein segregating the data
2 packets comprises:
3 tagging a data packet from the at least one of the plurality of domains with a
4 VMAN ID identifying the customer with which the domain is associated; and
5 forwarding the tagged data packet to a second one of the plurality of domains
6 associated with the same VMAN ID.
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- 1 3. The VMAN architecture system of claim 2, wherein forwarding the tagged data
2 packets further comprises:
3 routing the tagged data packets to a second switch that forwards only those
4 tagged data packets having a VMAN ID that matches a VMAN ID with which the
5 second one of the plurality of domains is associated, to a destination host specified
6 in the data packet.
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1 4. The VMAN architecture system of claim 1, wherein the first switch is an edge
2 switch located at the edge of the MAN.

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1 5. The VMAN architecture system of claim 3, wherein the second switch is an
2 edge switch located at the edge of the MAN.

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1 6. The VMAN architecture system of claim 3, wherein the routing is performed by
2 a core switch located in the core of the MAN.

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1 7. The VMAN architecture system of claim 3, wherein the customer domain is
2 comprised of at least one of a plurality of VLANs associated with the customer, and
3 wherein a VLAN ID identifying the at least one VLAN is included in the data packet
4 header.

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1 8. The VMAN architecture system of claim 3, wherein the specification identifying
2 the destination host in the data packet includes the VLAN ID.

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1 9. The VMAN architecture system of claim 1, wherein the switch is further
2 capable of segregating data packets from a multiple of the plurality of customers into
3 a second VMAN, the second VMAN providing to the multiple of the plurality of
4 customers a common third-party service.

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1 10. The VMAN architecture system of claim 6, wherein the common third-party
2 service is a connection to an Internet Service Provider.

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1 11. The VMAN architecture system of claim 6, wherein the common third-party
2 service is a connection to an Application Service Provider.

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1 12. A method for a VMAN protocol comprising:
2 receiving a data packet from a local customer domain at a local switch located
3 at an edge of a MAN;
4 adding a VMAN tag to the data packet at the switch, the VMAN tag comprising
5 a type and an ID, the ID identifying a portion of the MAN associated with the local
6 customer domain;
7 receiving the tagged data packet at a remote switch located at another edge of
8 the MAN;
9 stripping the VMAN tag from the data packet at the remote switch; and
10 forwarding the stripped data packet to a remote customer domain controlled by
11 the remote switch, the remote customer domain matching the local customer domain.

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1 13. The method of claim 12, wherein the local customer domain and the remote
2 customer domain are comprised of hosts belonging to identical VLANs.

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1 14. The method of claim 12, further comprising:
2 routing the tagged data packet to the remote switch via a core switch in the
3 MAN.

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1 15. The method of claim 12 wherein the data packet received from the local
2 customer domain is an 802.1Q tagged frame.

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1 16. The method of claim 12 wherein the data packet received from the local
2 customer domain is an untagged frame.

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1 17. The method of claim 15, wherein adding the VMAN tag to the data packet
2 comprises inserting the VMAN type and the VMAN tag between two well-known fields
3 of the 802.1Q tagged frame.

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1 18. The method claim 17, wherein the first well-known field of the 802.1Q tagged
2 frame is the Media Access Control (MAC) source address, and the second well-
3 known field of the 802.1Q tagged frame is a VLAN type.

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1 19. The method of claim 18, wherein the VLAN type is a hexadecimal value "8100"
2 having a length of 2 bytes of

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1 20. The method of claim 12, wherein the VMAN type is a hexadecimal value
2 "8181" having a length of 2 bytes.

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1 21. The method of claim 12, wherein the VMAN ID is a hexadecimal value having
2 a length of 2 bytes.

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1 22. The method of claim 12, wherein adding the VMAN tag results in a tagged
2 data packet having a length 4 bytes more than the length of the data packet received
3 from the local customer domain.

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1 23. An article of manufacture comprising a machine-accessible medium having
2 stored thereon a plurality of instructions for processing a VMAN protocol, comprising:

3 receiving a data packet from a local customer domain at a local switch located
4 at an edge of a MAN;

5 adding a VMAN tag to the data packet at the switch, the VMAN tag comprising
6 a type and an ID, the ID identifying a portion of the MAN associated with the local
7 customer domain;

8 receiving the tagged data packet at a remote switch located at another edge of
9 a MAN;

10 stripping the VMAN tag from the data packet at the remote switch; and

11 forwarding the stripped data packet to a remote customer domain controlled by
12 the remote switch, the remote customer domain matching the local customer domain.

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1 24. The article of manufacture of claim 22, wherein the local customer domain and
2 the remote customer domain are comprised hosts belonging to identical VLANs.

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1 25. The article of manufacture of claim 22, further comprising:

2 routing the tagged data packet to the remote switch via a core switch in the
3 MAN.

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1 26. The article of manufacture of claim 22, wherein the data packet received from
2 the local customer domain is an 802.1Q tagged frame.

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1 27. The article of manufacture of claim 22, wherein the data packet received from
2 the local customer domain is an untagged frame.

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1 28. The article of manufacture of claim 26, wherein adding the VMAN tag to the
2 data packet comprises inserting the VMAN type and the VMAN tag between two well-
3 known fields of the 802.1Q tagged frame.

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1 29. The article of manufacture of claim 27, wherein the first well-known field of the
2 802.1Q tagged frame is the Media Access Control (MAC) source address, and the
3 second well-known field of the 802.1Q tagged frame is a VLAN type.

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1 30. The article of manufacture of claim 22, wherein the VLAN type is a
2 hexadecimal value of "8100" having a length of 2 bytes.

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1 31. The article of manufacture of claim 22, wherein the VMAN type is a
2 hexadecimal value of "8181" having a length of 2 bytes.

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1 32. The article of manufacture of claim 22, wherein the VMAN ID is a hexadecimal
2 value having a length of 2 bytes.

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1 33. The article of manufacture of claim 22, wherein adding the VMAN tag results in
2 a tagged data packet having a length 4 bytes more than the length of the data packet
3 received from the local customer domain.

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